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Artisans of Meitei-Pangal/Pangal Community (Muslims) in the Making of Some Bamboo Tools and it's Implements and Their Role in the Conservation of Bio-Resource in Manipur

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***Abstract*— Tools and it's implements especially of bamboos have been searched, took photograph and documented their useful aspects. T3he information of artisans in relation with the tool creation by bamboo plants and their view of earning family income in deference with their traditional knowledge have been recorded during a study period (January, 2012 to Nov. 2014). A total of 3 genus 8 bamboo species useful in 5 (five) categories of human affairs i. e. Agriculture & Horticulture, Fishery, House making, Weaving and Others (household) to make tool & it's implements has been recorded. The plants are Dendrocalamus sericious Munro.(Ui), D.longifimbriatus Gamble.(Unan), D.giganteus Munro.(Marubob/Mareebob), B. tulda Roxb. (Saneibi), B. nana Roxb., B. kingiana Gamble (Watangkhoi), B.nutans Wall Ex. Munro.(Oootang) and Melocanna bambusoides Trin. (Moubi). The plants have been found to be conserved in the villages. It is believed that the long tradition of bamboo plantation has been converted to useful bio-resources of bamboo stalks in the villages.**

***Index Terms*— Tools, Bio-Resource, Bamboo, Conservation, Traditional Knowledge.**

I. INTRODUCTION

Tools and it's implements are inseparable parts of human beings. Development of human civilization rested on the making of tools. Tools are made by primitive people with woods/bamboos/plants from their surroundings. Modern world is full of tools and it's implements made by plastics and iron. But, plants are still useful in the villages and rural area where farmers/ less developed/primitive people resides (Das and Nag, 2006[1]; Karthikeyan et al., 2009[2]; Sharma et al., 2009[3]; Patil et al., 2014[4]; Elzubeir, 2014[5]).

Humans started to overcome obstacles with the natural weapons of stones and sticks. The produce of the earth furnished man with all he needed, and instinct told him how to use it (Rousseau, 1754[6]). Primitive people generally depend on the plants collected from the surrounding for musical instruments, house-making, baskets, agricultural implements, furniture, pencil, papers, medicines, foods, etc. (Sharma, 1996)[7]. Thus, the present study in respect of Meitei - Pangal/Pangal community of Manipur, India has aimed to document some of the useful plants particularly bamboo associated in the making of some useful tools and it's implements. Research and documentation of the tools made of bamboos in respect of this community has never been done before. Biswas (1988[8], 1995[9] and 1997[10]) had reported 45 species of bamboos from Manipur. Still, there is relevance of bamboo crafts and the thrush area of bamboo research has been elaborated (Tomar et al., 2009)[11] . The study in respect of the community had aimed to collect information about the tools and it's implements, mode of use and the bamboo plants involved/used by the community in the study in respect of bamboo plants.

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II. METHODOLOGY

The study was carried out during a survey (January, 2012 to November, 2014) carried out in the districts of Manipur i.e. Thoubal, Imphal East, Imphal west, and Bishnupur. In all respects, out of 144 persons interviewed, 10 artisans were involved. Direct noting into questionnaires with face to face interview was part of the survey The necessary information of tools and it's implements in respect of Agriculture & Horticulture, Fishery, Weaving, House building and others were carefully noted along with whatever the useful plants involved. The plants were identified at herbarium of Gauhati University, Guwahati and Botanical Survey of India, Shillong.

III. RESULTS AND DISCUSSION

Table I: Tools and it's implements produce of Bamboos in respect of Muslim Community in Manipur

Human affairs/ Botanical name of plants	***Vernacular name***	***Name of Tools/vernacular tool name***	***Mode of Use(s)***
(A) Agriculture & Horticulture			
1. *D.sericeus* Munro. & *D.longifimbriatus* Gamble	*Ui & Unan*	*Thommok*	These are measuring baskets used to measure paddy grains.
2. *B.tulda* Roxb.	*Saneibi*	*Cheirong*	This thrashes on the tail ender of straws so that paddy grains fall.
3. *D.sericeus* Munro. & *D.longifimbriatus* Gamble	*Ui & Unan*	*Yangkok*	This is used to remove Chaffs and winnow . Two hands are used to fling up and down the milled grains to remove winnow.
4. *B. nana* Roxb.	*Khokwa*	*Yotpak*(Spade) *and Thangol* (Sickle) *Makhok*	The spade is used to dig soil. Sickle is used in cutting the grasses and straw. This bamboo is formal handles of these tools.
5. *D.longifimbriatus* Gamble, *D.sericeus* Munro. & *B.kingiana* Gamble	*Unan, Ui & Watangkhoi*	*Phoura (Fig.XXII)*	Paddy grains are spread out over this *Phoura* in the sun shine.
6. *D.longifimbriatus* Gamble. & *B.tulda*. Roxb.	*Unan & Saneibi*	*Popu(Fig.VI)*	Shoulder-Clamp of Bulls for fixing country plough
7. B.tulda Roxb.	*Saneibi*	*Ukai Shamjet Maya* (Fig.XIII)	Common weeding out tool pulled by bulls.
8. *B.tulda* Roxb., *D.sericeus* Munro. & *D. giganteus* Munro.	*Saneibi, Unan & Mareebob/Marubob*	*Ukai*	Labeller of soil in the wet agriculture field commonly pulled by bulls. Lavelling process is called *Ukai Takpa*.
9. *B.nana* Roxb.	*Khokwa*	*Shambal*	Very useful for fencing for the agriculture and horticulture fields. to protect/ward off animals
(B) Fishery			
1.B. tulda Roxb.	*Saneibi*	*Longsha* (Fig. XII)	Finger projections of

			Spear. *Long* (Spear) is used to hurt/catch fish by a process/method called *Long Langba* (flinging the spear)
2.*B.nana* Roxb.	*Khokwa*	*Long Makhok* (Spear handle) (Fig. XI)	*Lon g(spear)* Before casting/throwing/fling the Long (spear) someone's hands are carefully hold on it.
3. *B.nutans* Wall. Ex Munro. *D. sericeus* Munro. & *D.longifimbriatus* Gamble.	*Ootang ,Ui, & Unan*	*Long-up*	Fish trap basket is convenient to trap fish by a process/method called *Longup tanba(hunting to trap fish)* a pond.
4.B.tulda Roxb.	*Saneibi*	*Hangel*	X - like structure attached with *Pou* (post) and *Eel (net)*, a part of traditional *Eel* (net) to catch fish.
5.B.tulda Roxb.	*Saneibi*	*Pou*	Pou or Post (Makhong) is Part of *Eel Chingba* (draw Net for fish catching).
6.*B.nutans* Wall. Ex Munro.	*Ootang*	*Taijep* (Fig.XII)	This is also used to trap fishes by positioned it at a convenient places may be called *Louri* (high field end/partition) of fields having water, grasses, straw, etc.
7.*D.sericeus* Munro.	*Ui*	*Ngarubak*	Fishes are kept inside this sac. This is convenient to take fish from one place to other.
8. D.longifimbriatus Gamble., *B.nutans* Wall. Ex Munro. & *D.sericeus* Munro.	*Unan, Ootang &Ui*	*Kaboru* **(**Fig.IV**)**, *Taothum, Taijep* (Fig.XII)	*Kaboru or Taothum (Fish trap)* are used to trap fishes by keeping *it* in a some tilted position at running water. The process is called *Loo thumba* (positioning fish trap). It is mainly carried out during rainy season in the fields.
10. D.serecious Munro.	*Ui*	*Nga tongol* (Fig.XIX)	Fish caught are kept inside this Bamboo container.
(C). Weaving			
1.B.tulda Roxb. & *B.nutans* Wall. Ex Munro.	*Saneibi & Ootang*	*Phi Shanaba Nachei* (Fig.XIV)	Part of waist-loom. Threads are hold by this slice of bamboo.
2. *D.longifimbriatus* Gamble. & *M.bambusoides* Trin. Syn. *M.*	*Unan &Moubi*	*Phi Shanaba Utong* (Fig.XIV)	3-5ft long culm of this bamboo is used as part of

baccifera			waist loom. This hollow, smooth and light culm is convenient for threading in the loom for making cloths.
D)Housemaking			
1. *B.tulda* Roxb.	*Saneibi*	*Ura thaba wachet*	3-6 inches thick and around 10-25 ft long slices of culms are used for roofing of houses, poultry house, cow shade, etc.
2. *B. nutans* Roxb. & *Melocanna bambusoides* Trin. Syn. *M baccifera*	*Ootang & Moubi*	*Phaklang wachet* (Fig.XXVII)	It makes house walls, upon which the wet mud and straw get to attach.
3. *D.giganteus* Munro.	*Marubob/Meeribob*	*House post*	Convenient for house post
4. *D. sericeus* Munro & *B. nutans* Wall. Ex Munro.	*Ui & Ootang*	*Paya*	Binding of fencing, house wall, etc.
(E) Others			
1. *D.sericeus* Munro. & *D.longifimbriatus* Gamble	*Ui & Unan*	*Kapon* (Fig. XXXI)	Cloths are kept inside this basket.
2. *D.sericeus* Munro. & *B. nutans* Wall.	*Ui, Ootang*	*Yenshang Polang* (Fig.XXXIX)	Vegetables are washed by keeping inside the basket.
3. *B. kingiana* Gamble	*Watangkhoi*	*Shajik Polang* (Fig.III)	Fodders are kept inside the basket.
4. *D.sericeus* Munro.	*Ui*	*Brush Stand* (Fig.II)	The Culm facilitates to keep teeth brush and *Miswak/yathinchei* (any kind of branches of woods/bamboos).
5. *B.tulda* Roxb.	*Saneibi*	*Broom (Urom Shumjit)*	The branches are bundled to make broom. This broom use to cleanse frontyard, side-yard and surrounding of the house. Useful to collect straw, leaf falls, grasses, etc.
6. *B.nutans* Wall. Ex Munro. & *B.tulda* Roxb.	*Ootang & Saneibi*	*Leihun (Book Stand)* (Fig.I)	Religious books are kept on it to facilitate reading while sitting.
7. *B.tulda* Roxb	*Saneibi*	*Khabei*	Facilitate to stir rice while cooking.
8. *D.giganteus* Munro.	*Marubob/Meeribob*	*Latrine, poultry, fencing*	Wall of toilet, poultry, fencing, etc.
9. *B.tulda* Roxb	*Saneibi*	*Thong makhong*	Bridge post
10. *B.nana* Roxb.	*Khokwa*	*Thong pambei*	Bridge handle
11. *B.nana* Roxb. & *B.tulda* Roxb.	*Khokwa & Saneibi*	*Kangjei*	Stick
12. *B.tulda* Roxb.	*Saneibi*	*Electric ki Mei punaba makhong*	Electric post

13. D. sericeus Munro, & *B. kingiana* Gamble	*Ui & Watangkhoi*	*Thouri*	Thin slice (Paya) taken from culms are used to make ropes
13. *B.nutans* Wall. Ex Munro.	*Ootang*	*Kharai* (Fig. XXXII)	Chilly and Vegetables are kept on it to make them sundried.
14. *D. sericeus* Munro. & *B. kingiana* Gamble	*Ui & Watangkhoi*	*Leipak Polang*	Soil dug out is carried from one place to other place by using *Leipak polang*.
15. *B.nana* Roxb.	*Khokwa*	*Paya*	Long slice of this bamboo is used for loose /temporary binding.
16. *B. kingiana* Gamble	*Watangkhoi*	*Polang* (Fig. XXX)	Dom shaped Basket for housing Poultry

PHOTOPLATE

Fig I: *Leihun* (Book Stand)

Fig II: *Yathin Utong* (Teeth brush Stand)

Fig III: Shajik *Polang* (Fodder Basket)

Fig IV: *Loo/kaboru* (Fish Trap)

Fig V: Jameruddin, Kwakta (Artisan)

Fig VI: *Popu* (Cow neck Clamp for Ploughing)

Fig VII: *Shot* (Pot cover)

Fig.VIII: Moulana Md.Qayamuddin (Artisan with *Loo*)

Fig. IX: *Nga Tongol* (Fish collection Sac)

Fig.X: *Keirak* (Ladder)

Fig XI: *Long* (Spear)

Fig XII: *Taijep* (Fish Trap)

Fig. XIII: (*Ukai Shamjet*) Paddy field Laveller

Fig. XIV: *Utong(cylinder) and Nachei* (thin whip)(2nd & 3rd from Right

Fig. XV: Unan (*D.fimbriatus* Gamble)

Fig.XVI: Tools of waist - loom including *Pangaldem* (loop like structure =muslim's invention)

Fig. XVII: Md.Habibullah(artisan)

Fig. XVIII: *Wachet* (Slice of Bamboo)

Fig.XIX: *Paya* (thin slice of bamboo) for making *Loo* (Fish trap), Fig.XX: *Ootang* (Bamboo)

Fig XXI: ***Hangel (fish net housing)***

Fig. XXII: ***Kharai*** **(Spread Sheet)**

Fig.XXIII: ***Phoura*** **(bigger paddy spread sheet)**

Fig.XXIV: *B.kingiana* Gamble (*Watangkhoi*)

Fig.XXV: ***Yengol (poultry house)*****made by bamboo**

Fig.XXVI: ***Yotkhok*** **(Bamboo handle of Spade)**

Fig. XXVII: Roofing with Bamboo

Fig.XXVIII: ***Paya*** **(Thin Slice) of bamboo for making** ***Polang*** **(Dom Shaped Basket Fig.30)** *B. kingiana* Gamble.

Fig.XXIX: Md Azizuddin Sangaiyumpham Cherapur (artisan)

Fig XXX.: Dom Shaped Basket to house poultry

Fig.XXXI: *Kapon* (Cloth Basket)

Fig.XXXII. Paddy Measuring Basket

Fig.XXXIII: *Saneibi* (*B.tulda* Roxb.)

Fig.XXXIV:*Moubi*(*M. bambusoides* Trin.)

Fig. XXXV: *Ui* (*D. serecious* Munro.)

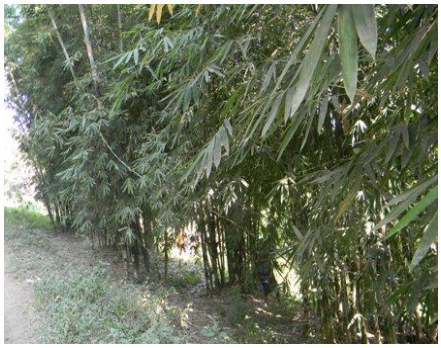

Fig. XXXVI.: *Khokwa* (*B.nana* Roxb.)

Fig.XXXVII: Md Islmuddin, Artisan

Fig.XXXVIII: *Unan* (*D.longifimbriatus* Gamble)

Fig.XXXIX: *Yenshang Polang* (vagetable's basket)

Fig.XL. *Longup* (fish trap)

IV.DISCUSSION

The present research has recorded 8(eight) bamboo plants i.e. Dendrocalamus sericious Munro.(Ui), D.longifimbriatus Gamble.(Unan), D.giganteus Munro.(Marubob/Mareebob), B. tulda Roxb. (Saneibi), B. nana Roxb., B. kingiana Gamble (Watangkhoi), B.nutans Wall Ex. Munro.(Oootang) and Melocanna bambusoides Trin. (Moubi). Tools make us easier to carry out works. Works are ranged from inside the houses and outdoor one's. The tools and its implements/raw materials given in the Table I have been made by using bamboos available in the villages of this community in study. The tools associated with various categories of human works i.e. Agriculture, fishing, weaving, house-making and various other works indicated these are used by humans of Manipur particularly Muslim community in the study for livelihood. Source of sustenance and earning of economy is the basis for becoming artisan. The artisans in the present study earn at the rate of an average income i.e. Rs. 49, 877 per year as it was claimed by them.

The tools (Fig. II, VI, X, XIII, XXI, XXII, XXV, XXVI, XXVIII, XXX) use by farming/agriculture community are cheaper and prepared on sustainable basis. It is indicated that the plants are quickly and easily available. Some quickly available plants are Khokwa, Saneibi, and Watangkhoi, etc The materials are collected from the surrounding i.e. home stead forest, side yard, backyard, near graveyard, riverbanks, near mosque etc. Wherease, for making tools (Fig. I,III,IV,V,VIII,VIII,IX,XI,XII,XIV,XVI,XVII,XIX,XXIX,X XXI,XXXII) we depend on the plants brought from the village forests or household forests. To make tools of the latter type, the artisans sometimes search for the bamboos i.e. Saneibi, Unan, Ootang, Marubob and Moubi.

The artisans require an exact knowledge for making a tool/ raw materials apart from implements. One most important and difficult part of manipulation/processing of bamboos is considered to be Paya Shiba (slicing of bamboos). The skills of artisans require (1) Cutting of Bamboo(Wa yanba), (2) Cutting nodes (Matangda kakpa), (3) Slicing bamboo parts (Wachet Khaiba i.e.slicing of 4-8 inch broad piece of bamboo) (Fig.XVIII), (4) Slicing pieces (Paya Shiba). Slicing pieces of bamboos is the most burdensome part of bamboo work. Slices are of 6 (six) types i.e. Shambal Paya(binding thin slice of bamboo), Polang Paya(slice for making basket), Phaklang Paya(slice for house wall binding), Kharai Paya (slice to make Spreadsheet), Thouri Paya(slice to make Cord), and Loo Paya/pajeng(slice for making fish trap). The skill and knowledge of artisans has been transmitted from fore – fathers to sons of the villagers and their relatives. This can be said to be traditional knowledge. This knowledge can also be called Village/Rural based Knowledge (V/RBK). Most of the people (informants) found out on search basis have been engaged themselves to make tools and are doing this out to earn family income. Some stopped making it on health ground. Most of the artisans are above the age of 20. One artisan aged 82 years still works on Loo, longup, taijep, long, paya, thommok, yangkok, phoura, yenshang polang, polang, etc. to earn family income/economy.

All the artisans are of the opinion that they should be given incentives from the government side. The authors are of the view that the incentives given to such artisans for small scale industry are not reached to them. Most of the artisans do not know that the government departments are giving incentives to them. They possessed knowledge of tool making and can

be usefully converted to create small scale industries in the villages for the welfare of the people. This industry is environment friendly because the materials can be returned to our environment. The expertise of the artisans can be made source of village economy. Bamboo tools are better than the modern appliances which are more of rubber and plastics which are not environment friendly.

The other aspect worth to be discussed is about the bamboo plants. The villages are full of bamboo. Every house can be said to be having bamboos at an average of some 2.3 acres of land. Not only are the useful aspects of bamboos in the study, these are socio -culturally useful plants in respect of this community in the study (Ahmed and Singh, 1997)[12]. Every house has a bunch of bamboo plantation at its backyard indicated that the people sense the threat of houses being dismantled by the wind. These are grown as wind shield. Thus, bamboos have been un-separable part of Pangal/Meitei-pangal community in the study. Therefore, bamboo conservation can be said to be intact in the villages. Long time standing of bamboo plants makes a kind of forests from small scale to large scale. This conservation can be called perpetual conservation for the bamboo plantation is under protection due to its continuous re-growth. And, the plants have been growing long time. Tomar et al. (2009) highlighted on the need to conserve bamboos by community based approach, availability of micro credit for people operating at very subsistence level, strengthening inventories of bamboo genetic resources, etc.

Thickness of the bamboo forest can be further studied in yet other ecological research programmes. The conserved bamboo forest can be argued to be bamboo conservation forest. Because, bamboos are continuously growing in the areas where research was conducted. Thus, bamboos have become a useful bio-resource to a group of human being in the study.

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